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Rail Road News.

Railroads in the East Indies.

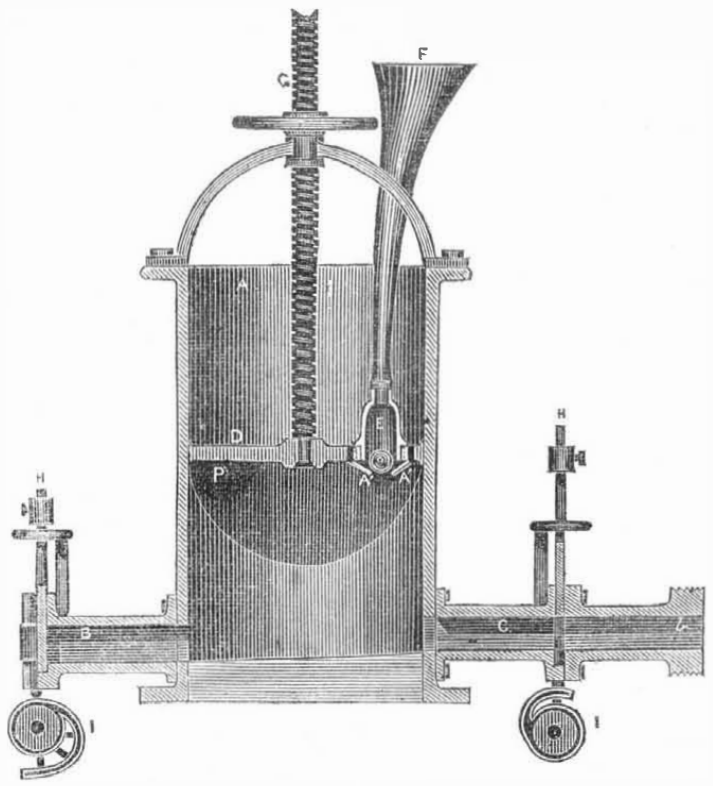
The Anglo Saxon spirit is achieving and is destined to achieve the conquest over barbarism throughout the world. In every case the civil qualities command: the savage giant feels himself small in contact with the scholar, although the mind of the latter may be encased in a very frail tenement. This is the reason why the rude and uncultivated inhabitants of secluded districts soon change their habits and manners when brought into frequent contact with the learned ond polished. Commercial intercourse between a civilized and savage people, soon changes the character of the latter for the better. By the great improvements in locomotion, such as steam navigation and railroads, the people of all nations are fast commingling in sentiment, and the rude and uncivilized must give place to a more enlightened philosophy. On every island in the Pacific, with a few exceptions, the Anglo Saxon has established his supremacy and erected his abode. The terrible cannibal of New Zealand has left his human repast, and he beholds villages of civilized men studding his Island where a few years ago the cannabalian banquet was spread in savage brutality. In India, (people may talk about the cruelties or the Anglo Saxon rule as they may, but one thing we know,) the Hindoo mother no longer throws her children to feast the crocodiles of the Ganges, nor does the widow ascend the funeral pyre of her deceased husband. The Thug has been blasted in his cursed trade, and under Saxon rule, that wonderful and ancient people are rising to a higher position in the scale of civilization. The rivers of India are now navigated by the swift steamboat, and the iron horse will soon be dashing across the Mahratta plains, more potent in his career than all the mounted warriors of Hydra Ali's host. Guicowar a Mahratta prince of Guzerat has patronized a railroad to be built between his capital city and the Gulph of Cambia. This is the first instance of a native prince investing capital in a useful work. He has appointed a European engineer to survey the line and frame all the estimates to be defrayed out of his own purse and he will take one-fourth of all the shares. He has ordered from England the iron for a circular model railway of three miles, with a model locomotive to run on it, and a proportionate length of telegraph wire for messages in pure Mahratta, to be conveyed along it. This is a great step for revolutionizing Hindostan. The proposed large line of railway, is forty miles long, and the district to be traversed is perfectly level and well cultivated, but there are wretched roads through it. It is in the heart of the East India cotton country, and the line is to be hereafter connected with the great Bombay railroad.

A voyage has recently been made from Plymouth to Adelaide, in seventy-seven days, upon the principle of what is called composite-great-circle sailing.

This is a most extraordinary voyage.

IMPROVEMENT IN MACHINES FOR MAKING PAPER.

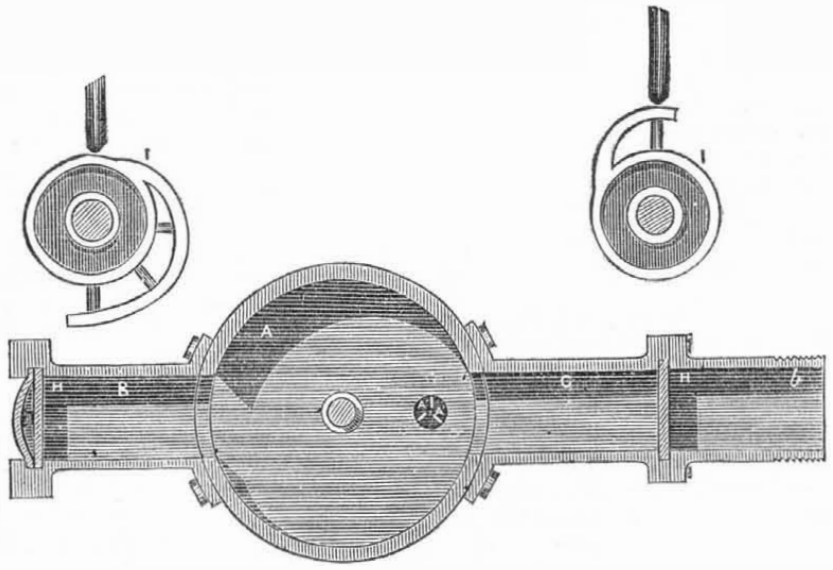
Figure 1.



This improvement on paper machinery is the invention of Mr. Henry Pohl, of Paterson, N. J. It is an improvement on what is termed the Regulator or Pulp Metre. It measures the quantity of pulp for webs of different thickness, and webs of the same thickness. It is very important that this should be done with great exactness, for the difference of a few pounds in a few webs, will arrive at a great amount of profit or loss in the course of a year. As the pulp is very thin, it will easily be perceived that the measuring of it for webs of the same thickness, and the graduating of the machinery for webs of different thickness, such as foolscap, post, &c, must be a very nice arrangement. These objects are obtained, it is believed by Mr. Pohl, in a very simple and natural manner. Working machinery is in operation at the Paper Mill at Paterson, with the most satisfactory results, and measures have been taken to secure a patent.

Fig. 1 is a vertical section, showing the interior, and fig. 2 is a transverse section, taken at a line cut across at the bottom of the moveable cap of the regulator cylinder. A is the regulator cylinder; B is the outlet pulp conduit, and C the inlet one; D is a moveable cap, it fits the cylinder snugly, but is capable

Figure 2.



of being moved up and down, to set it at any point in the cylinder by the screw, G; this screw works in a screw collar at the top of the arch and is turned with the wheel, so by turning the wheel, the moveable cap is raised or lowered in the cylinder, to increase or diminish the space, P, below the said cap, wherein the pulp is measured. H H are two gates on the inlet and outlet conduits or pulp passages. They are made in the common way, being secured to be lifted alternately by the cams, I I, placed on revolving shafts, which strike up the arms of the gates, by the projections, and when the said projections of the cams cease to act upon the arms, the gates drop into their places by their own weight, and close the passages. The cam of the outlet gate has a larger projection than the one on the inlet gate, to allow the measured pulp in the cylinder longer time to flow out, as the gravitation of the said pulp is not so great, as the pulp in the large reservoir (not represented) which supplies the regulator. The bottom or bed of the cylinder is inclined, to let the pulp flow out. Through the moveable lid of the cylinder there is an orifice, communicating with the inside of the pulp chamber, P, of the cylinder, and with the atmosphere, by the pipe, F, which is united to a small cylindrical valve chamber, E, which is screwed to the cap covering the orifice spoken of, which has three small bars, A1 A1 A 1, as a guard to the hollow ball, seen in figure 1. This ball acts as a valve to allow the air to pass out of the tube when the pulp is flowing in from the reservoir, and to allow the air to rush in when the exit gate is opened to assist the *pulp* in flowing out.

OPERATION.—The exit gate being closed, and the gate of the inlet passage, C, being open, the pulp flows into the cylinder by gravitation, from the reservoir, until the chamber, P, is full below the moveable cap, D. The pulp being very thin, if the cap is screwed closed down for thin webs, the flow from the reservoir will sooner be checked, than when screwed farther up for thick sheets. When the pulp is flowing in, the air escapes through the tube, F and the ball, when the pulp reaches it, is floated into its seat in the small chamber, E, closing the aperture of the tube. When the inlet gate is closed, the outlet gate is opened, and the pulp then moves down the inclined bottom, the ball drops from its seat, and the air rushes in through the tube, F, and presses on the pulp assisting it to flow out. It is therefore a self-regulating valve—the very thing necessary for this purpose. The inlet passage is attached to the reservoir by the screw, *b*. The claims of this improvement are for the regulating cap, and for the combination of its communication with the atmosphere and the inside of the chamber P, operating in the manner described for the purpose set forth.

Useful Receipts.

Custards without Eggs.

One quart of new milk, four tablespoonfuls of flour, two of sugar. Season with nutmeg or cinnamon, and add salt to your liking. The milk should be placed over a quick fire, and when at the boiling point, the flour should be added, being previously stirred up in cold milk. As soon as thoroughly scalded, add the sugar, spice, and salt. This is an excellent dish, and deservedly prized by every one who has tried it.

Prussic Acid in Cholera.

In the London Medical Times (Allopathic) of Nov. 12, 1849, Dr. Downing mentions having used Prussic Acid "in extreme collapse, with manifest advantage." Mr. Shea, at Dr. D.'s suggestion, "Tried it in more than one hundred cases of Cholera, and stated his conviction that it was superior to anything that he had ever before employed. He had given it to children as young as nine months old with excellent, effect, and he had never in any case found prejudical effects follow its use."

Dandelion Coffee.

Dr. Harrison, of Edinburg, prefers dandelion coffee to that of Mocha, and many persons, all over the continent, prefer a mixture of chicory and coffee to coffee alone. Dig up the roots of dandelion, wash them well, but do not scrape them, dry them, cut them into the size of peas, and then roast them in an earthen pot, or coffee roaster of any kind. The great secret of good coffee is to have it fresh burnt and fresh ground.

The Pottsville Register states, that earthen retorts from Scotland are now on trial at the Philadelphia gas works, to test their superiority in comparison with the old iron ones.

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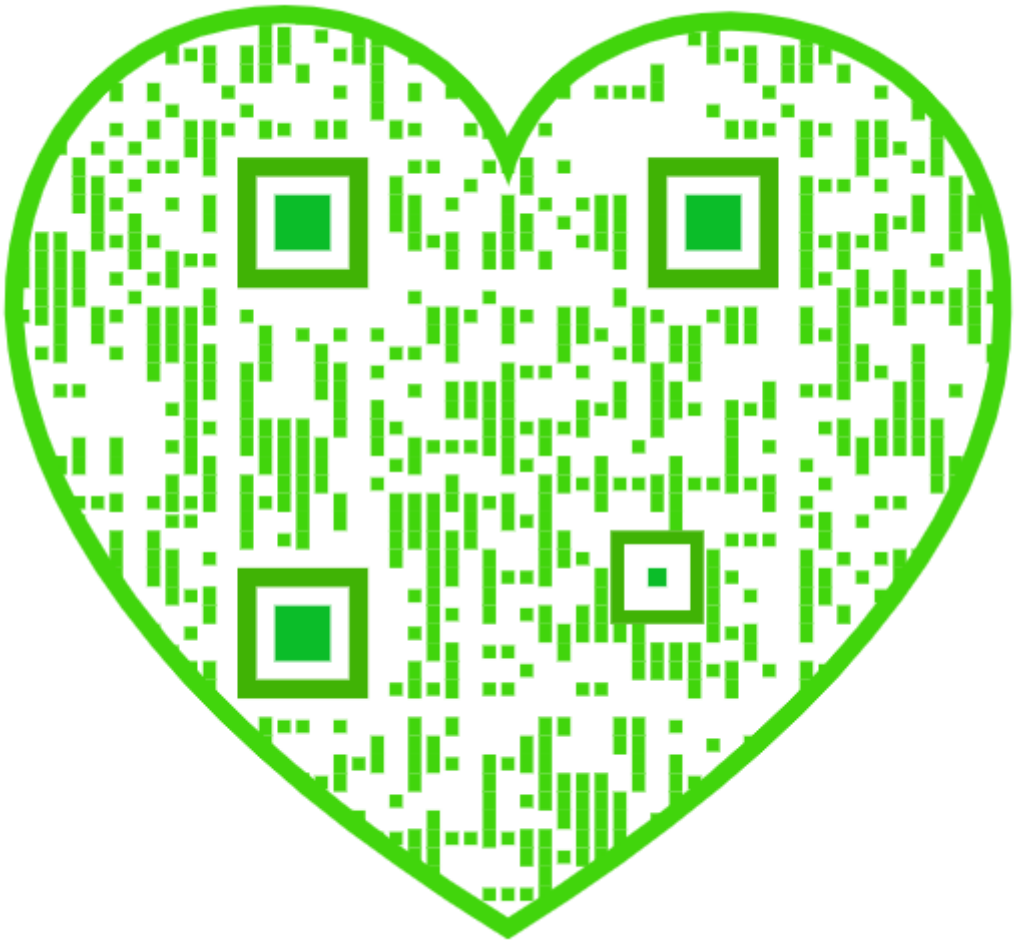

Miscellaneous.

Correspondence of the Scientific American.

WASHINGTON CITY, March 30, 1850.

A few days ago we had quite a gathering on the public grounds opposite the Smithsonian Institute, for the purpose of testing the powers of a new self-sharpening plow, by J. Reynolds. Among the visitors was President Taylor, who not content with looking on, left his carriage, rolled up his pantaloons, and "bore a hand." The way the old gentleman guided the plow drew a smile of approbation from many a practical farmer, who saw that Old Zack can do some things as well as others. I wonder what the crowned heads of Europe would have thought had they seen the President of this great Republic up to his knees in dirt, guiding a plow? If every inventor can get his invention thus tested, he may consider himself fortunate.

From the significant action of the House this week, in laying the Woodworth Patent bill on the table, it is very evident that it will "sleep the sleep that knows no waking." The petitions against it embrace the names of over 20,000 persons. The great objection is, that the application is not for the same invention as the original patent. One of the members of the Patent Committee contends that Woodworth did not make an original discovery, and that previous to 1828, numerous patents for planing machines were issued in this country and in Europe, one of which does three times as much work as Woodworth's.

A letter from Fort Washington, Md., mentions a curious incident connected with a recent search for fossils at that place. The writer says, that Lieut. Davis, while vigorously applying the pick, found in a fossil rock, at the depth of some five or six inches, several pieces of wrought iron, in the form of an eye staple, about seven inches long, broken about an inch from the eye; two rivets, some two inches long, with four or five other pieces of different shapes, but evidently wrought by the hammer and anvil. The marl beds in the vicinity of Fort Washington are very rich; more than forty different kinds of fossils have been obtained from them, thus furnishing important aid to the researches of the geologist.

There is now exhibiting, at the Capitol, a newly invented machine for making 5000 percussion caps per hour, completely finished in one operation. The inventor is Geo. Wright, an enlisted soldier at our Arsenal. He asks Congress for some remuneration. The ingenuity of the contrivance is pronounced most admirable. *

The Boy Mathematician.

The boy Stafford whose mathematical genius has attracted so much attention by the early development of his pecular powers, is made the subject of remark by Prof. Pierce, of Harvard College, in his report to the Visiting Committee of the Lawerence Scientific School.—Stafford attended the Professor's lectures on Analytical Mechanics, and showed himself perfectly competent to master this difficult subject of research. Up to this time he fully realizes his early promise of extraordinary power as a geometer, but his friends notice with alarm that his body does not keep pace in growth with his intellect, and that he is not gaining that robust health so necessary to a strong mind. It will be remembered that he is under the charge of Edward Everett and Professor Pierce, and is supported by the liberality of gentlemen in Boston.

Texas Claret.

An excellent claret is now manufactured in Texas, from the Mustang grape. As many as five barrels has been made upon a single plantation. The spontaneous production of this grape in Texas exceeds all belief. Thousands of hogsheads of wine, nowise inferior to French Claret, could be manufactured every year from this hardy native grape.

The English government will give twenty thousand pounds sterling to any party or parties, of any country, who shall render efficient assistance to the crews of the discovery ships under the command of Sir John Franklin.

Webster's Trial.

This trial, which has been the all-engrossing topic of conversation "by the fireside and by the way," for the past two weeks, was terminated in Boston on Saturday last. The jury retired at 5 minutes after 8 o'clock, P. M., and came into court at 11 o'clock, with a verdict of "Guilty." The verdict has already been the subject of severe criticism, many regarding it as unjust considering the imperfect character of the testimony. We trust for the honor of the State, and the nature of the crime, that the jury were thoroughly convinced of the prisoner's guilt before they returned the verdict. If any doubt existed in the minds of the jurors, it should have been removed, if possible, one way or the other before the close of the trial. It is not in our province to review causes of this kind, but we have an interest in seeing justice meted out to the prisoner. The case is a peculiar one, and the well-known reputation of all the characters concerned, enhanced the interest of the trial.

On Monday, at 9 o'clock A. M., Dr. Webster was brought into court, and received the sentence of death pronounced by Chief Justice Shaw, who delivered a most thrilling address on the occasion.

Death of John C. Calhoun.

It has truly been said that "when a great man dies the nation mourns," and we are pained to record, in this connection, the death of one of the mightiest intellects of the age, one whose public services have been eminent no less than his private virtues were estimable. He departed his evenful life at a quarter past seven, on Sunday morning, March 31st, in the city of Washington. The event, however, was not unexpected, as his health for several months has been very feeble, so much so as to prevent him from attending to his Senatorial duties. In consequence of the fluctuating nature of the complaint, hopes were entertained of his recovery to the last,—but he has gone, leaving a mighty intellectual void in the existing affairs of the nation, and a large circle of friends to mourn his departure—

"The highest, the proudest, the wealthiest bow
As low as the poorest the lowliest now."

Hague Street Explosion.

The enterprising proprietors of the Sun Lithographing establishment, have just issued a beautiful and correct colored engraving of the awful scene in Hague street, at the time of the great explosion on the 4th of February last.

The execution of this engraving is admirable, and many have testified to its correctness in representation. Published and for sale at the Sun Lithographing Establishment, 128 Fulton street. Price 25 cents. [Orders may be sent to this office.]

Tearing Down the Telegraph.

The telegraph wires extending to Newburyport, (to be continued to Portland by the proprietors of Bain's line,) have, during the present week been torn down for the length of three miles. On Tuseday, two men were caught doing the work of demolition by the Superintendent, Mr. C. T. Smith. They said they were employed and paid for the work, and gave the name of their employer. The fellows were provided with a ladder and the necessary tools. —[Boston Times.

[Those who tear down telegraph wires and mutilate railroads should be consigned to State Prison.

A Novel Incendiary Detected.

Mr. George A. Thayer, druggist, was somewhat surprised yesterday morning by the smell of burning wood, which pervaded his store, at the corner of India and Fore streets. On searching the premises to discover the cause, he found that his large show bottle in his corner window had concentrated the sun's rays into a focus upon a sign board, which had been placed for a short time near the bottle, A hole was burned in the board, some two inches broad, and nearly through.—[Portland Argus.

Coal at the South.

The prospective value of the extensive coal fields of Alabama is doubtless very great, since they are nearer and more accessible to the depots of steamers at Chagres and Panama than any other coal deposit yet discovered.

Gold Region of California.

The gold region of California is between four and five hundred miles long, and from forty to fifty miles broad, following the line of the Sierra Nevada. Further discoveries may and probably will increase the area. It embraces within its limits those extensive ranges of hills which rise on the eastern border of the plan of the Sacramento and San Joaquin, and extending eastwardly from fifty to sixty miles, they attain an elevation of about four thousand feet, and terminate at the base of the main ridge of the Sierra Nevada. There are numerous streams which have their sources in the springs of the Sierra and receive the water from its melting snows, and that which falls in rain during the wet season.

These streams form rivers, which have cut their channels through the ranges of foot hills westwardly to the plain and disembouge into the Sacramento and San Joaquin. These rivare from ten to fifteen, and probably some of them twenty miles apart.

The principle formation or substratum in these hills, is talcose slate; superstratum sometimes penetrating to a great depth is quartz. This, however, does not cover the entire face of the country, but extends in large bodies in various directions—is found in masses and small fragments on the surface, and seen along the ravines, and in the mountains overhanging the rivers, and in the hill-sides in its original beds. It crops out in the valleys and on the tops of hills, and forms a striking feature of the entire country over which it extends. From innumerable evidences and indications, it has come to be the universally-admitted opinion among the miners and intelligent men who have examined this reigion, that the gold, whether in detached particles and pieces, or in veins, was created in combination with the quartz. Gold is not found on the surface of the country presenting the appearance of having been thrown up and scattered in all directions by volcanic action. It is only found in particular localities, and attended by peculiar circumstances and indications. It is found in the bars and shoals of the rivers—in ravins and in what are called the dry diggings.

Cure of Cancer.

Cancer is a terrible disease, and although in many cases it has yielded to no very uncommon treatment, still, taking the disease into account, it is difficult of treatment in the extreme, and regular physicians generally resort to the knife. The following article from the New Orleans Delta shows that one physician has great skill in the treatment of such a dis ease, without the knife operation.

"Dr. Gilbert whose frequent successes in curing cancers, without the use of knife or other cutting instrument, has been referred to in this paper, took us yesterday to see the most horrible case of this loathsome disease we have ever witnessed, and which is in a fair way of recovering. A young man had a cancer, which grew out at the base of his nose, and extended itself over his eyes, so as entirely to blind him and to cover two-thirds of his face. He was reduced to the last stage of suffering, and had been given up, as utterly incurable, by the most eminent surgeons of the West and of this city. They told he had only to lay down and die,—that the operation of cutting would cause his death, and that was all they could do for him. At this point, Dr. Gilbert was called in, and commenced attending the case. It immediately began to assume a promising appearance, and after a few days the cancer was removed, the patient was enabled to see, and his whole health began rapidly to improve, so that in two weeks after Dr. Gilbert had commenced to practice upon him, he was able to get up, dress and shave himself, and write to his friends, and he is now in a fair way to recover."

Twenty thousand pound's worth of American smelted copper has arrived in England.—It was shipped from Baltimore. It has caused a flutter among the British smelters.

There is no great use in men grubling with this world, while they are in it, for it is their place of residence the best they know of by experience.

LIST OF PATENTS

FOR THE WEEK ENDING MARCH 26, 1850.

To Isaac Adams, of Boston, Mass., for improvement in apparatus for receiving and transferring to the pile sheets of paper from printing presses and paper machines.

I claim the cylinder, in combination with the rollers and the bands marked B, or any device substantially the same, (the above named fly net being included) from receiving the printed sheets from printing machines, or printing presses, upon a curved, or cylindrical surface, and, by means of said curved, or cylindrical surface, transferring them with their printed sides upwards, to the pile, or the table provided to receive them.

I also claim the device embodied in the combination consisting of the screws, the pawl, the lever, the part, the click, the wheels, and the tables, or any device substantially the same, for lowering the pile of sheets, the accumulation of sheets upon said pile governing the operation as aforesaid.

To C. B. Baker, of Troy, N. Y., for improvement in Brick Presses.

I claim, first, the employment of the mounted roller, turning independent of the wheels on which it is borne, and forming a guiding carriage for the moulds, substantially in the manner and for the purpose set forth.

I also claim the stop, or weight catch-lever, for guiding the moulds in entering under the grating.

To Hugh Bell of London, England, for improvements in Balloons and their appendages. Ante-dated Nov. 23, 1848.

I would have it understood that I do not confine myself to the precise details herein set forth but what I claim is the application of one or more flexible partitions which I have termed the "Septum membrane," to ballons for the purpose herein before described.

Secondly, I claim the application of a rotary motion, in conjunction with a hinge motion for the purpose of producing motion in the fan or bale, forming the tail, which motion is more or less assimulated to that of birds tail in order to effect the steerage, substantially in the manner herein described.

Thirdly I claim the use of the water grapnel for the purpose of arresting the motion of Ærial Machines, and also the application of elastic material or by introducing some elastic material or metal spring in its length.

And lastly I claim the construction of the valve as applied to balloons, in which the valve or plate during its motion retains a position parallel to its seat.

[Drawings of this machine has long been in our possession. We believe that this is a whale of a balloon.]

To C. D. Birdseye, of New York, N. Y., (Assignor to W. Latting), for improvement in Filters.

I claim the construction and arrangement of the filter with a woollen woven fabric wound on to a spool, substantially as herein set forth, and admitting the water so as to pass down the cloth presented edgeways, as above fully described.

To R. Burton, of Rome, N. Y., for method of connecting the sections of gold washers.

I do not claim the constructing of gold washers in sections, neither the connecting of said sections together by hinges. But what I claim is the mode of connecting and holding firmly together said sections by means of the strip of iron, the rods, the socket, and the chain, substantially in the manner and for the purpose above set forth.

To S. Chapin, of Ashland, Ohio, for improvement in Exercising Chairs.

What I claim is connecting the movable apron and back by means of adjustable arms, substantially as herein set forth, whereby the back and legs of the sitter can be so equally balanced that he can rock himself to and fro, with the slightest exertion.

I also claim the adjustable self-adjusting foot board in combination with the moveable apron, substantially in the manner and for the purpose set forth.

The great lake discovered in the interior of South Africa, in latitude 19 south, and in longitude 24 east, has since been explored. The vegetation upon its banks is tropical; the language of the native upon its shores is unlike that of any other of the African trbes.

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For the Scientific American.

Construction of Chimneys.

I noticed in your paper of the 5th Jan., a letter on smoking chimneys and their remedy by Lieut. Col. W. Mason. And though the Col.'s plan is a good one, there are instances in which neither his nor any other of the ordinary modes of constructing chimneys will do; where the room is too small or tight for the size of the fireplace, or where there are fire places above, and all the rooms shut up, the air pressing down through the upper flue to supply the fire will bring the smoke into the room. It has been suggested by some writer, that the flue should be made large enough, to admit a descending current of air, but unless we could compel the ascending and descending currents, like we can wagons on a turnpike, to "keep to the right as the law directs," they will meet, mingle, and carry the smoke into the room. After long experience and various trials to remedy this, I devised the following mode: I had sheet-iron tubes made and placed them horizontally in the flue of the chimney as low down as I could make room for them, after passing the arch. From one end of these tubes, I made a small opening or flue, say four by six inches running to the most convenient point, (that would be free from noisome exhalations) on the outside of the chimney, and a similar one from the other end of the tubes to the inside of the chimney into the room, at the proper height to hang a picture over it if desired; in this way I admitted any desirable quantity of air, which was heated in its passage through the tubes about fifty degrees, when there was a brisk fire, perfectly ventilating the room and carrying in much heat that would otherwise have ascended the chimney and been lost. The tubes should be about 2½ inches in diameter, and as long as the fire place is wide, keeping the flue that length until the tubes are inserted, and then reduce it to its proper size; or if the fire place is narrow (a grate fire place, for instance,) or if it is desirable to have the tubes larger in diameter, they should be returned in the flue so as to cause the air to traverse the flue twice, or more, before it enters the room, that it may be better heated. They should be placed near the back of the flue, as the greatest heat is there, and about 1½ or 2 inches apart, two or three in a tier or row, the upper ones just over the spaces between the next lowest ones, so as to arrest the ascending heat as much as possible, and leave a space of 4 or 5 inches in front, through which to take down the shingles or boards, with which tubes should be covered, to catch the falling mortar. The ends of the tubes may be fixed in pieces of sheet iron, the corners of which may be cut out three or four inches square and the edges bent down at right angles so as to form a kind of box with the open side from the tubes and communicating with the air flue to fit the masons work to them.

Though I used stove pipe iron, it would perhaps be better to use copper, as there would be some difficulty in replacing them if they should rust out. They should be swept occasionally, for when coated with soot, they would not heat the air so well. As stove rooms are never so well ventilated as fire-place rooms, this improvement might be applied with greater advantage to them. All that is necessary is to place a pipe, not more than half the diameter of the stove pipe, in that part of the stove pipe which runs in the room, like a place in a boiler, it may be supported in the centre by pieces of wire resting on the inside of the stove pipe when the pipe is vertical, or by pieces suspended from the upper part, when it is in a horizontal position. The joints being of the same length with the stove pipe, it may be put up and taken down with it; and by an elbow joint at each end of it, let one end open through the stove pipe into the room, and the other be extended to the most convenient point in the wall where the air is pure, and through the wall form a communication with the external air. It is immaterial whether this end is above or below the stove pipe, as the draught of the stove will take the air rapidly through it. By forming in this way a passage for the air through that part of the stove pipe which runs in the room, its temperature would be so elevated as to render it delightful, and there need be no more consumptions and other diseases, from the want of fresh air in stove rooms; and if economising heat be taken into consideration it would cost no more than the pipes now in use, for it is said that a stove pipe does not part with all its heat in less than forty feet from the stove, where there is no drum, and this current of air passing through it, would take it off in less than half that distance, and by dispensing with drums, &c., be as cheap as the present mode, and far more comfortable and healthy. By putting water on the stove we may supply the air with moisture, but not with oxygen, that most essential gas which is continually being exhausted, both by the fire and the act of breathing. It should have been stated, that where the stove pipe is much out of a vertical position, the air pipe should be raised above the centre as it recedes from the stove, as the hottest air occupies the upper part of the stove pipe, as soon as it has time to arrange itself.

In the summer of 1843 I applied for a patent for this improvement, as it is applied to chimneys, and was informed that one Daniel Pettibone, in the year 1808, took out a patent for hollow iron grate bars, and back logs, which might be placed in, above, and below the fire, they might also be placed above the mantel. This, in the opinion of the Office, precluded my claim, and it was rejected for want of novelty, and I withdrew the application. But if these bars and back logs had ever been used in the way here described, I did not know it, nor have I since heard of any instance, and if they were placed about the fire, as is implied by their names, they would only have conveyed into the room the heat, the greater part of which would have been thrown into the room by radiation, while my object was to arrest it after it had passed into the flue, and would have been otherwise lost. In the common way of constructing chimneys and stoves, the fresh air, when it forces its way into the room, being colder, is denser and heavier, and of course falls to the floor, and moves along its surface to the fire, where it becomes heated and is drawn up by the chimney or stove, leaving the vitiated air to be breathed over and over again. Of this fact most persons have had rather unpleasant evidence, when they have been sitting at a distance from the fire, between it and a door or window, their feet become very cold when the room is warm enough to keep the rest of their bodies comfortable.

The device here recommended, if properly executed, reverses this order of things, the fresh air, being the warmest, floats above the rest, which, in its turn, is displaced by still fresher, pressing the other downwards, and forcing that strata which has been longest in the room, to make its exit through the flue. Chimneys with or without the tubes, should be so built as to heat the air as much as possible as it enters the flue, as it will then expand and require a larger space to move in; the flue should be enlarged and plastered smooth, to lessen the friction.

H. Pollard.

Lafayette, Mo., Feb. 15th, 1850.

Re-Action and Percussion Water Wheels.

Messrs. Editors:—You will please correct the following remark, on page 131, as you will see that the stop being in the wrong place alters the sense of the reading: "I then made a disc or head of plank two inches thick, doubled at right angles, of a diameter of two inches more than the circle of the buckets, to strengthen the wheel." "I then made an anular rim," &c. I wish to be understood, that there was a space round the rim of two inches in radii, outside the circle of the buckets, for the strengthening of the wheel.

There is 108, instead of 198 feet; we sawed nine times through the log in 18 minutes, from the time the saw entered tho log in the first line, until it stopped at the end of the last line, being nearly 11 square feet per minute, sawing and setting; I will also add, it was a very soft yellow poplar. Also correct: "in Esquire Wade's mill we took out three overshot wheels, two of them were 13 feet diameter," and insert, "we took out the grist mill; one of 12 feet diameter, nearly new, &c., we took out of the saw mill.

In No. 20, page 155, present Vol., I see my remarks called the attention of a certain Mr. S. L., in reply to my communication in No. 17, page 131; he states that "Smeaton has not, to my knowledge, laid down any rules such as J. S. speaks of, for re-action wheels, or other wheels." In my remarks I stated, "to find the velocity of the water, per minute, under the head, I wished to erect the wheel, (I used the rules laid down by Smeaton,)" perhaps I should (as I think I did) have added for to find the velocity of spouting fluids; "from which," &c. If I had stated that Smeaton gave rules for the wheel referred to, it would have been incorrect.

I really am at a loss to see how, by any common mode of argument, S. L. could suppose my remarks lead him to lay before the public so much of the biography of Mr. Smeaton as to inform us, that for many years he was a constant attendant upon Parliament. I hope S. L. may admit that it may be possible; I have seen the result of as many experiments of English, Scotch, French and Americans, as my worthy opponent. I also state that none of them, who wrote previous to the date of Parker's patent, understood the principle of the wheel referred to. I assert, as I have frequently expressed myself, that Mr. Parker's principle has not reached its acme, the mechanical effect, or co-efficient, is 70 or more per cent., which is too much to allow for friction.

S. L.'s remarks on Maj. Kightley's mills, convinces me that he did not understand what he was endeavoring to explain; I find it very difficult to get my hands and employers to understand the principle of the combination of percussion, centrifuge, re-action and the syphon, to the same wheel, and for his gratification I will state that no modern writer has touched on it, although Borda, Burdin, Poncelet, Danaides, Whitelaw and Stirrat, Combe, Cadist, Fourneyron, and others, have given the result of their experiments, on re-action or turbine wheels. Maj. Kightley ranks, where he is known, among the first class of mechanics; he has run his mill for nearly three years, and he admits that it is a mystery yet to him, (he can speak for himself.)

If S. L. is in earnest, and will send to Mr. Z. Parker, Newark, Licking Co., Ohio, and obtain of him a copy of his millwright's tables, and a copy of his experiments, (which I have no doubt Mr. Parker will be willing to forward, as his patent and principle has passed through a fiery ordeal of five or six trials in the U. S. Courts, for infringements, yet it never has been discussed before the public,) and study them, then call at Maj. Kightley's mills, if he does not find them, as I have stated, his expenses and time shall be paid, which I will guarantee.

I make no profession to high literary or mathematical science, I am only a millwright. We have as much work as we all can attend to; we intend to carry on four jobs in different counties the ensuing year; but "as facts are stubborn things," if S. L., or any other gentleman, will guarantee an amount equivalent to my time and expenses, I will erect a mill at any place directed, and if it falls short of what I state it will cost him nothing,—by studying and seeing he will learn.

At present there are no writers, that I know of, that meddle with it, except the Committee of the Franklin Institute, who made a report of 17 experiments with a wheel 36 inches in diameter, 150 square inches issue, on 11th Dec., 1845; also 21 experiments with a wheel 40 inches diameter, 200 square inches issue, May 9th, 1846, and 13 experiments with a wheel 36½ inches diameter, 150 square inches issue, 22d May, 1846, which S. L. will please examine.

J. S.

Floydsburgh, Oldham Co., Ky.

Nimroud.

Layard, the Oriental traveller, has effected an entrance into a room of the Palace at Nimroud, containing an extraordinary quantity of shields, swords, bowls, crowns, and ornaments in ivory and pearl, beautiful chased and embossed.

To Preserve Wood.

Brevet Major Hagner, in his report of observations, during a recent tour in Europe furnishes an interesting description of Dr. Boucherie's process of empregnating timber, with a solution of sulphate of copper. After the varnishing, the appearance of the wood is rich, and is said to be permanent. The Dr. confines his application of it to soft wood generally, and he exhibited a work box so impregnated, made of a tree within three months after it it was cut. He shows a block sawed into three sections, but not disconnected, which has been buried for six years in a fungus pit. It is of pine, and immediately after being filled the two side sections were impregnated by means of the natural action of the sap vessels of the wood, the one with the dento-chloride of mercury (corrosive sublimate, as recommended by Kyan), 800 grammes of 1-5 per cent. strength; the other with 800 grammes of sulphate of copper, of 1-5 per cent. The centre section was left in its natural state. The block shows the portions which were left in a natural state, and that impregnated with the corrosive sublimate, equally and completely rotten, the fibre destroyed, and the wood crumbling into dust, while the section marked as impregnated with the sulphate is perfectly sound and good. The Doctor says that traversers and sleepers on railways so impregnated have been used six years, and are still sound.

Air Guns Vs. Rifles—or Wind Vs. Steam.

Messrs. Editors—In your paper of the 9th inst., I was glad to see you expose the errors contained in the article on "Air Guns," lately published in the new Dictionary of Mechanics, edited by Mr. Byrne. In your paper of the 16th inst., to my astonishment, the author stands by his article, and challenges contradiction, by declaring that "everything stated as fact has been tested by numerous experiments." Experiments? Just listen to the following reasoning and deduction, based upon —experiment! "Air guns, however, project their balls with a much greater velocity than that assigned above, and for this reason, as the reservoir or magazine of condensed air is commonly very large in proportion to the tube which contains the ball, its density is very little altered by passing through that narrow tube, and consequently the ball is urged all the way by nearly the same force as at the first instant; whereas, the elastic fluid arising from inflamed gunpowder is but very small, indeed, in proportion to the tube or barrel of the gun, and therefore, by dilating into a comparatively large space, as it urges the ball along the barrel, its force is proportionally weakened, and it *always* acts less and less on the ball in the tube. Hence it happens, that air condensed only ten times into a pretty large receiver, will project its ball with a velocity little inferior to that of gunpowder."

I take it for granted that when Mr. Byrne says "condensed air," he means air condensed as high as practicable in an air-gun, and when he says "gunpowder" he means a full charge thereof, proportioned to the ball and the barrel, and not a few grains.

As soon as Mr. Byrne can spare time to give us the experiments upon which this eccentric reasoning and deduction is founded, the better —for such reasoning and deduction is just exactly contrary to the fact, as exhibited in the globe air-gun and powder rifle, to my own certain knowledge, obtained from study, experiment and practice—and also contrary to the experiments and deductions of Robin's and Hutton, certainly the highest authority on this subject to be found amongst mechanical writers.

Powder Rifle.

[The author of the above communication is *the* one who knows more about the theory and practice of fire-arms—their comparative effects, &c., than any man in this, or any other country.—[Ed.

The amount of California gold received at the United States Mint and its branches, from the first consignment, in 1848, to the 15th ult., is a fraction over $12,000,000. The value of property, including gold and silver, shipped to California, from the commencement of the gold fever to the present time, is roughly estimated at $50,000,000.

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New Inventions.

New Method of Propulsion.

We have had an opportunity of examining the new application of steam power in navigation, for which the ingenious inventors, the Messrs. Ruthven, of New-street, have secured patents both in this country and the United States of America. The disadvantages of the paddle-wheels in steam vessels are too well known to require enumeration. The attention of the Messrs. Ruthven, of Edinburgh, whose names rank high as engineers, has, it seems, for a long period been directed to this subject. The result has been the discovery or application of a new method of propelling or navigating steam vessels. The arrangement consists in the forcible expulsion of water from a nozel or bent pipe, at each side of the vessel, which is effected by the power of the steam engine. The form and properties of a sailing vessel are preserved—there being no projections on the hull in the form of paddle-boxes or otherwise. Under the engine, which is placed in a horizontal position, is a round iron case, in which there is a wheel, having a shaft through what is termed a stuffing-box, on the upper or outer side. The piston of the steam engine is attached to the shaft cranks, and the steam power is applied wholly to revolving the wheel in the iron case, which being made something like a fan-wheel, carries the water with it in its revolutions. The water in obedience to the laws of centrifugal motion, presses towards the outer rim of the case with a force proportionate to the speed, and escapes by an aperture and pipe at each side, whence it is discharged by the nozzle or bent pipe, into the sea. The water is supplied to the iron case by a large flat pipe, which has a free communication with the sea by means of apertures in the bottom of the vessel. The nozzle is above the water line, and can be turned by the seamen on deck with the greatest facility, so as to discharge the water either towards the bow or stern. Discharging the water astern, makes the vessel go ahead; when discharged towards the bow, the vessel goes astern; and when discharged downwards, the vessel remains stationary. These operations are effected without the engine being altered or stopped—a material improvement on the paddle-wheel; and as the elevation of one nozzle is rapidly altered independently of the other, ample facilities are given for turning the vessel.

[The above is from the Edinburgh Courant, a Scottish paper; the Messrs. Ruthven, we suppose, are those engineers mentioned in the Information for the People. It is our opinion that the invention is not of great consequence, and we see but little difference between it and the one in the Scientific American last week, except in the mode of turning the pipe to discharge either fore or aft without stopping the pump.

By referring to the foreign specification of Mr. Ruthven we find that the pump has concave blades in the direction of its motion, and the claim is for "pump with curved plates," and the mode of discharging which we have mentioned. No patent has been secured in this country, as stated by the Courant.

A New Explosive Powder.

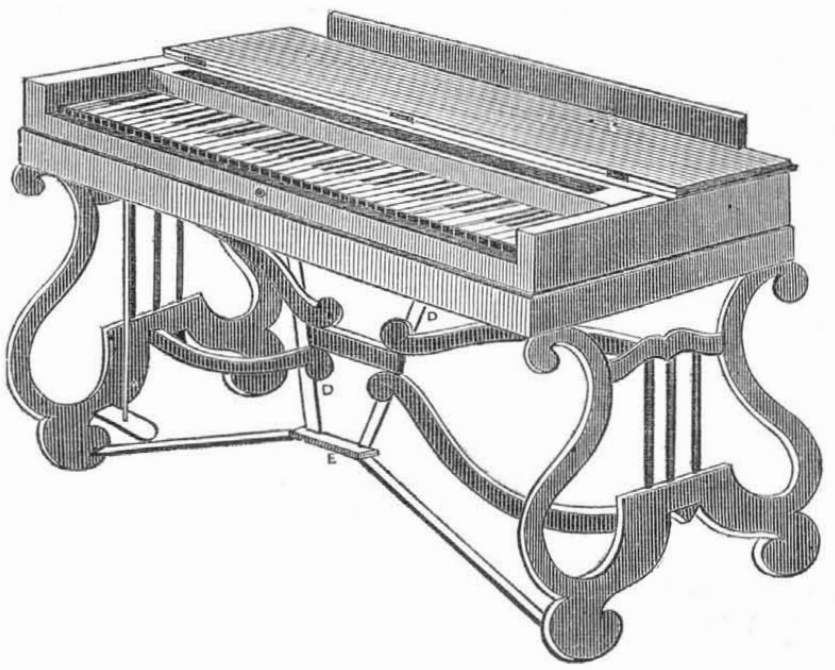
Mr. Angender, Assayer at the Mint of Constantinople, has addressed a communication to the Academy of Sciences at Paris, describing the discovery of a new explosive powder, having for its base the Prussiate of potash. The composition is (by Weight) crystalized dry yellow prussiate of potash one part, dry white sugar one part, chlorate of potash one part. These three substances are reduced seperately in a mortar, to fine powder, and then intimately mixed by hand. In operating on any quantity, the mixture is moistened with a very little water, and beaten in a bronze mortar with a wooden pestle. It is not necessary that the mixture should be as intimate as in the case of ordinary gunpowder,—a quarter of an hour will suffice to mix it. It is then grained in the ordinary manner, and dried in the air. The discoverer, M. Angendre, considers that this powder is equal in strength to three times its weight of the common kind. It is easily made, and the substances of which it is composed have a fixed and determined composition. It is not injured either in dry or damp air, but it is not suitable for small fire arms, only for those of cast iron, and it will answer a good purpose in blasting. The reason why it is not good for any fire-arms of steel, is owing to the chlorate of potash, which oxidizes steel with great rapidity. Some of our civil engineers may find this powder invaluable for blasting, as they can make it themselves, it being equally as effective when in a state of powder as when grained. No other powder must be allowed to mix with it, for in ramming the bore for a blast, the friction of the particles of the old powder will be ready to ignite the new kind.

Improved Machine for Doubling and Twisting Silk.

Messrs. Joseph Conant & Lucius Dimock, of Northampton Mass., have invented a valuable and improved macnine for doubling and twisting silk.

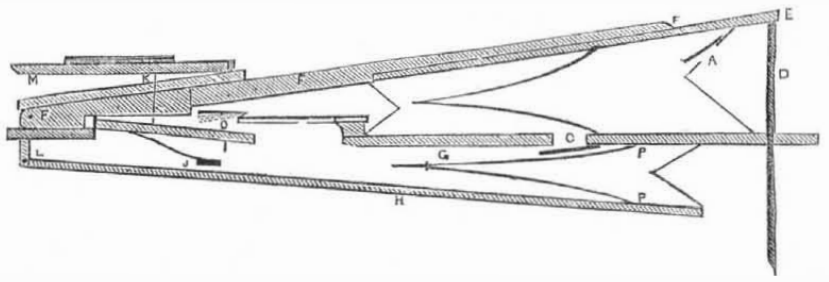
A great difficulty has always been experienced in doubling and twisting silk to make a fine smooth thread, owing to the fact that the doubling, in machinery heretofore used for that purpose, has always been accomplished by twisting together the threads of separate spools, which are rarely alike in texture. This must make an uneven thread. This improvement doubles each thread from a single spool, and does it with speed and unifermity. Measures have been taken to secure a patent.

IMPROVED PARLOR MELODION.---Figure 1,



This is an improved Parlor Melodion, the invention of Mr. A. L. Swan, of Cherry Valley, Otsego Co., N. Y., who has taken measures to secure a patent. Figure 1 is a perspective view, in which there is little difference in appearance from other like instruments. Figure 2 is a transverse section showing the interior bellows arrangement. The tone of this instrument is very full and sweet. E is a foot pedal on which to press, to operate the bellows; D D are straps attached to the pedal and to the opening board at the bottom back part of the instrument. There are other two diagonal straps attached to the feet, to support the pedal board. In figure 2, A is a valve, through which the air is admitted to the bellows, when the board is drawn down by the straps, D, which are attached to the pedal in figure 1. The air is forced in through the valve, C, into the lower section, which combines both bellows and wind-box. This part has a moveable bottom hinged at L, which has a constant tendency to close by the spring G, which is attached to the bottom and centre boards at P P, thereby keeping a constant pressure of air upon the valve, I, which is kept shut by the spring, J. When the key, M, is pressed down in the usual way, by the operator, when performing, it opens the valve, I, by means of the moveable pin, K, which allows the compressed air to pass through the reed pipe, O, thereby creating the soft melodious sound peculiar to this instrument. F is an arm which serves as a guide to the moveable board, H, which being hinged or centred at L, allows it to vibrate by the action of the foot upon the pedal, E, fig. 1, to actuate the bellows, keep the wind-box full of compressed air, ready to rush through the reeds, when their valves are opened by the action of the fingers upon the keys.

Fig. 2.



We have made but a few references to fig. 1, because every person will understand it without any more description. It is operated like the common piano, with the exception of operating the pedal with the foot, in unison with the "flying fingers." These instruments are sold very cheap, only $40, and they are calculated to find a place in hundreds of families, who have a taste for such music, but who have not the means to purchase more expensive instruments. At the price, we have never seen an instrument to equal this. The musical qualities of an instrument are not determined by its size nor appearance. The violin is a dwarf in stature, but a giant in power, and some Timotheus with this instrument may

"Amid the tuneful choir
With flying fingers touch the lyre
And heavenly joys inspire."

More information, by letters *post paid*, may be obtained of Mr. Swan, directed as above.

The pump illustrated in No. 27 of this Volume, is the invention of Homer Parmelee, Mr. Kase being the Assignee. This fact has been stated to us before, by Mr. Kase, but was overlooked at the time. Both parties reside in Danville, Pa.

Celestial Phenomenon.

A zodiacal light or something like it, is now attracting the attention of the English astronomers. It extends from the horizon to near Saturn, having a triangular shape, the base on the horizon.

New French Printing Press.

Paris is a great city—a great place for things wonderful and new. If any other part of the world gets up something of an extraordinary nature, it will not be a wonder long, for something will soon be brought out in Paris with a *grande flourash*, to distance all competition. This appears to be the case with a wonderful new Printing Press—to throw the American one of Messrs. Hoe entirely in the shade. It s thus described by foreign journals:

It consists of a series of lateral cylinders, and occupies little more than half the space of the American machine with which the *Patrie* s printed, costs less than half the money paid for that, and is free from the cords and tapes which so frequently throw that machine out of action. The number of men employed for each of these new machines is only three.—The printing is from stereotype, not from the metalic type, and the number of copies thrown off by one machine per hour is 15,000. Each cylinder carries a continuous sheet equal to 2,000 copies of a journal, and each copy is cut off by the machine and folded. The paper is not damped; the impression is superior to any produced on damped paper. The stereotyping is an almost miraculous process. In the ordinary course of stereotyping several hours are required: here it is the work of fifteen minutes. A few sheets of tissue paper are placed together and passed upon the form containing the types. Thus the mould is formed, the metal is poured upon it, and as soon as it is cold the stereotypes are ready for the cylinder. Thus the wear and tear of type is avoided, and a fount of type will of course be as perfect at the end of a year as at the commencement of it.

[The cost of a machine is stated to be only $5,000. The next thing we will hear about, from Paris, is a machine which will take in the manuscript at one end and trundle it out at the other (*never wearing the type*) into printed books, papers, and radical speeches.

Re-Vaccination.

Every individual is susceptible of vaccination; re-vaccination is not necessary before puberty; the system undergoes the change at puberty, and re-vaccination is then necessary; vaccination is a sure preventative of varioloid; the system is succeptible of varioloid after puberty, whenever the individual is exposed to small-pox without re-vaccination, but it is not necessary if the first operation was performed since puberty; those who disregard vaccination are always liable to small-pox whenever exposed to the influence of that dreadful disease; if every individual were vaccinated before puberty, and re-vaccinated at the revolution of the system, there would be no such disease existing as the small-pox.

Astronomical Society.

An association for astronomical purposes has been organized in this city. Samuel Hausen Cox, D. D., has been chosen President. It is to be under the superintendance of Proff. Mitchell, and the instruments are to be supplied from Germany. We are glad to see such a society organized.

The proposed sub-marine telegraph between Dover and Calais is said to be approaching completion. The tower for the battery offices and general works, at Dover, is nearly erected; the insulated wires are in a forward state of progress, and expected to be sunk across the Channel in the course of the month of April.

Re-Action Water Wheels.

We have received a number of articles lately, upon the above subject. We will publish plain experience on this subject, but we cannot afford room for controversy.

In England there is a population of 7,000,000 who can read and write, and the letters which passed through the Post Office last year were 356,000,0000. In the United States, with a population of 5,000,000 capable of reading and writing, there were only 62,000,000 letters during the same period.

Bromuret of potassium is now used to produce insensibility, in the same way as chloro form is used.

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Scientific American

NEW YORK, APRIL 6, 1850.

Preventing Damp in Walls.

It often happens, that walls by capillary attraction absorb moisture from the ground, which soon destroys the cohesion of the mortar, and at the same time has such an effect upon the walls that they crumble away, and are gradually but surely destroyed. This occurs in damp situations, where no proper care has been taken to protect the foundations. Some walls of stone, when exposed to high and low atmospheric temperatures, condenses the moisture on their surfaces, which enters the pores of the stone and separates its particles, which crumble away at a slow but certain ratio. This we believe is true of the Capitol at Washington, as mentioned in Mr. Ewing's Report. Something should at once be attempted to arrest this evil.

In 1813 some French chemists turned their attention to this subject, and Mr. Gros, who was appointed to paint the Cupolo of the Pantheon, after having made some experiments, went to MM. D'Arcet and Thenard, chemists, to consult upon the subject. They soon came to the conclusion that it would be necessary to saturate the stone as deeply as possible with some unctious substance liquified by heat, which, when cooled, would harden and stop up the pores of the stone. Knowing that the ancients passed melted wax over the walls they intended to paint, they tried a coating of wax and linseed oil, rendered drying by litharge. After many experiments, they were led to prefer a composition of one part of wax, by weight, three of boiled oil, and one-tenth of litharge.

The way of applying this coating was as follows :—The surface of the stone is scraped perfectly clean, and then by a portable furnace, portion after portion of the walls are heated to a good heat, and then the composition kept at a temperature of 100°, is laid on quickly, with large brushes. Coat after coat of this composition is laid on in the same way, in every case using as great a heat as possible to dry, but not to carbonize the oil. The stone being saturated to a certain depth with this mastic, and the surface being smooth and dry, it receives a coat of white lead mixed with oil, and on that the finishing coat of paint is executed.

This plan was put in execution to coat the Pantheon, by M. Gros. After the work was completed, drops of water, like dew, were found to cover the surface of the cupolo every morning. It at first alarmed the artist, but this moisture never passed beyond the surface, and was the condensed moisture of the atmosphere, caused by the cold of the evening, and it appeared and disappeared without any evil consequence, and has stood the test of time since. Stuccoed walls may be treated in the same way and with the same effect, if the moisture does not rise by capillary attraction.

As the Report of the Secretary of the Home Department suggested the offering of a reward for some effectual plan to prevent the decay of the walls of the capital, we have presented the above, which we think will accomplish the object and remove the evil. Experiments with the above mastic should be tried whenever Congress adjourns, and should it prove successful, we shall have the consolation of having done the Republic some service.

The Streets of New York.

The streets of New York are great in wet weather for planting cabbages, and in windy, dry weather we have always a fine touch of the Simoon in the Desert of Sahara. It is really wonderful that our Broadway merchants are so dull in the understanding, or lazy in the undertaking. We have no doubt but they lose hundreds of dollars every year by having their goods spoiled with dust. Why don't they sprinkle the streets with hose, and keep down the dust; but no, they don't seem to know enough to do this, but depend on providential showers of rain to wash the streets and clear the gutters. When our streets are repaired, the pavers should not be allowed to leave four inches of sand to cover up bad work and make mortar beds of the crossings. It is to be hoped that our merchants will sprinkle the streets before their stores, with Croton water, using tubes with perforated nozzles. This is by far the best way and the cheapest.

Paving for Streets of Cities.

It is astonishing to see the numerous plans that are advanced almost day by day, for the better paving of our streets. One proposes one thing and another proposes something different at the next meeting of our Common Council, each purporting to be superior to everything that has preceded it. At one period the wooden block pavement was to astonish the world by its superiority over cobble stone, granite block, and every other block. Well, it had its day, and at last *paved* the way of its own extermination. The Russ pavement, or old Roman, (to give it the proper name) has proved itself to be the most enduring. This pavement is composed of large granite blocks laid on a firm bed of cement and concrete. The great evil of this pavement, and one that will ultimately bring it into bad repute, is the largeness of the blocks, for when they are worn smooth there will be no foothold for the horses. In fact this evil is very apparent now in Broadway. The cobble stone pavement is a very poor one, and the granite blocks laid down without a bed of concrete, has proved to be a miserable job.

The question to be asked is, what really is the best kind that can be used ? A good pavement should give a good foot-hold to horses, be endurable, smooth and not too expensive. It is our opinion that if the granite blocks of the Russ pavement were cut into four pieces they would answer a far better purpose, for then they would always afford a foot-hold for the horses.

A new system has been tried in London, and has been tested for ten years with the most gratifying results. This method is to remove the subsoil to the depth of sixteen inches, then lay a layer of 4 inches of strong gravel, well rammed down, then another layer of gravel, and a little chalk is well rammed, and a third of the same stuff, all well rammed, and the street made slightly rounding. Stones of good granite 4 inches deep, 3 inches thick, and 4 inches long, are then laid down in fine sand, each carefully placed not to rock in its bed, and the whole surface well rammed down.—This system has been found, by thorough experience, to be infinitely preferable to the large blocks, and for that reason it is well worthy of the attention of our city authorities.

Reform of the Patent Laws.

A patent is a *certificate* of government granting to the patentee, as the original inventor of the improvement described in the specification of the Patent, the exclusive right to make, use and sell his invention in the United States, for the period of fourteen years. The patent is not a Bill of decided proofs that the patentee is the real inventor, but a certificate merely and recognised as a legal instrument, unless the specification is denied to be true—in other words, the originality of the invention denied. The patent laws are general laws, not municipal regulations, or made for party charters and the purposes of monopoly. The original *inventor* of an improvement, whoever he may be, high or low, rich or poor, upon the payment of the universal fee, is entitled to a Patent. No other but the original inventor has a right to a patent. If any person receives a patent, and he sees or hears that some other person is using the same apparatus, or combination of machinery described in his patent, and he orders him to stop, he should show his authority for the enforcing of his request. If the person refuses to stop using the apparatus, &c., claimed as patented, the patentee should then apply for an injunction, and the defendant, if he shows good reasons before the U. S. District Court that he has testimony to prove the patentee not to be the original inventor, or that his machinery is not the same as that of the patentee, and demands a way to test the claims of the patentee ; the Court should order a Jury trial to take place at the very earliest date. People may talk as they like, but it is only by a trial at Common Law, that all the facts bearing upon such a case, can be fairly brought out, and the fairest decision rendered. No arbitration can settle such a case, it is not one for arbitration. When the originality of the invention of a patentee is denied, no arbitration can justly be allowed, for then it is not a question, merely, between the plaintiff and defendant, but the laws of the United States and the plaintiff likewise, for they recognise the *inventor* only entitled to a patent, and if the patentee is not the original inventor, he has no more right to the exclusive right of making, using and selling the article or apparatus described in his patent, than any one of the people without a patent. As a trial at Common Law is the only way to test the validity of a patent, and as the mode of prosecuting the claims of the patentee and defending the position of the defendant, requires much acuteness in a peculiar line—a great deal of scientific information, an acquaintance with machinery, &c., and legal knowledge of a very distinct kind from all others, it will be always difficult to find lawyers with the requisite qualifications—their numbers, as they have been and now are, will always be very limited.—They will always command good fees. A faithful, attentive and persevering lawyer is never an expensive one in comparison with a dilly dallying, inattentive one, however brilliant his oratorical powers may be. Acute research and great powers of comparison, are the grand requisite for a patent attorney—and need we mention it "honesty." It is very easy for a lawyer to make his client, if he is an illiterate man believe he is doing every thing for his interests, when in fact he is doing nothing at all. It makes no matter how many laws may be made, how many amendments added to the Patent Laws, the process of contesting and defending Patent Rights, will always be expensive. The very nature of such business involves expense, for the field of defence covers the whole history of invention. The drawings of patents, books on science and art (and numerous they are,) have all to be explored both by the prosecution and defence. In other cases, simple witness testimony relating to the circumstances or facts of dispute, tests the question of "who is right and who is wrong," but the witnesses in the case of patents, may be taken from every encyclopedia and every book on arts and manufactures, and every periodical published.

The best advice to give an inventor, is to be sure and have a correct specification plain and well executed by those acquainted with the business, and when you have occasion to employ an attorney, be sure and chose a good one—one that will investigate the case with shrewdness and watch it like a weasel.

JUNIUS REDIVIVUS.

New York.

Natural History of Man.

Professor Agassiz, at the meeting in Charleston, S. C., of the American Association for the Advancement of Science, avowed his disbelief in the unity of the human race ! He declared his readiness to maintain, in opposition to the authority of Scripture, that all the nations of the earth were not made of one blood, but that the different races of men descended from different stocks !

[We have seen the above article in many papers, and it will no doubt travel to the world's end, but the way we read Prof. Agassiz's statement, in the Charleston papers, was, that, "he did not believe that the whole human races sprang from one pair, and he was ready to maintain his opinions *by scripture*."

Bill for the Reform of the Patent Laws.

We are much obliged to Geo. Gifford, Esq., for a copy of the proceedings of the Convention of Inventors, held in Baltimore, and for a copy of the Bill presented to Congress containing all the proposed amendments. We have given the Bill a casual perusal, and like it with the exception of one section, and that we find no fault with, except the impossibility of carrying out its provisions. We will give this Bill a more rigid examination, and present its leading features next week.

A bill has just passed the Nova Scotia House allowing every man to be his own lawyer.

Works on Science and Art.

ENCYCLOPEDIA OF CHEMISTRY.—This splendid work, edited by Prof. J. C. Booth, assisted by Mr. C. Morfit, which we briefly noticed last week, is for sale by Mr. John S. Taylor, 143 Nassau street, this city. It is a work which demands of us more than a mere passing notice. It covers the whole field of chemistry, as applied to the arts and sciences. The article on Agriculture is a splendid one, brief but comprehensive, embracing a range of deductions on the nutriment of plants, which we wish was more generally understood by our farmers. The article on Electricity, by Prof. R. S. M'Culloch, is an able one, profound in every point. It is not possible to present any leading thoughts of an Encyclopedia, as it is a dictionary explaining the nature and application of all the discoveries of chemistry. Being arranged in alphabetical order, we can refer particularly to its usefulness as a book by this arrangement, and endorse its qualities for correctness and extensive range, embracing as it does such a wide field. Chemistry is a science among the very oldest, and yet how young. It only began to walk during the 18th century, and by taking up the old Chemistry Dictionary of Dr. Ure, published in Glasgow in 1821, and comparing it with the one before us, we are struck with the mighty strides made in the science of Chemistry, in the short space of thirty years. The name of Liebig had not then astonished the world by his discoveries in Agriculture and Animal Chemistry, and one work (not so well known as it should be) was not then known; we refer to that of the Assistant Editor, Mr. Morfitt, on chemistry applied to those useful arts, "Soap and Candle Making." As no library is complete without a common dictionary, it is also our opinion that none can be *without* this Encyclopedia of Chemistry.

DICTIONARY OF MECHANICS, ENGINE WORK AND ENGINEERING.—We have received number 6 of this work, published by D. Appleton & Co. It treats of Casting and Founding somewhat elaborately, but we suppose that something more will be said of Type Founding in some other number, as the plan described in this is behind the age of present practice. It has a good article on the Centre of Gravity, but the great evil of abstract writers on Mechanics, is their want of a proper knowledge to render things practical. Dick's Anti-Friction Press—not so good as the one in the Sci. Am. last week ; Circular Saws, Cloth Shearing Machines, the Condensing Engine and Coining machinery are illustrated. It is a very good number.

ICONOGRAPHIC ENCYCLOPEDIA.—Part 7 of this splendid work published by Rudolph Garrigue, No. 2 Barclay street, N. Y., has just been issued. It maintains its high character for matter and manner. It contains 20 steel plates, with no less than 30 or 40 figures in each, and the usual 80 pages of black letter. The illustrations relate to anatomy in all its branches. The plates are most excellent, in fact we say nothing more than the truth when we say, "they are not equalled, nor approached by any other Encyclopedia whatever."

Fusible Plug for Boilers.

We have received the Eastern Mail, of Waterville, Me., in which there is a letter about using a fusible plug in steam boilers, to prevent explosions. We suppose that it is not generally known that this fusible plug is old and well known and was used long ago, and that many boilers, with such plugs, have exploded. The Reports of Mr. Burke, Ex-Commissioner of Patents, will give any person all the information desired on the subject.

Newcastle Coal at Pottsville.

The strange fact is stated that coal from Newcastle, England, is taken to Pottsville to be used in the workshop of the Reading Railroad Company; the price of it under the present tariff being lower that American coal.—[Exchange.

[Can this be possible ? If this coal has been imported to Pottsville, it surely must be for some other than a common purpose. Is it not for gas ?

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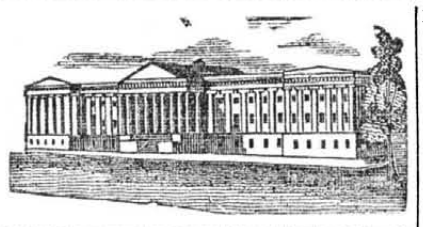

LIST OF PATENTS CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending March 19, 1850.

To E. H. Ashcroft, of Boston, Mass., for improved method of applying fusible metal to boilers.

I claim inserting the fusible metal in a perforated cap which is protruded through and screwed into any sheet of the fire or flue surface of the boiler, substantially as herein setforth, in such manner that the bottom of the cap is exposed directly to the action of the heat, the fusible metal within the cap closing the end of the tube through which the steam rushes to give warning when the metal melts.

To M. C. Bryant, of Lowell, Mass., for improvements in looms for wiring piled fabrics.

I claim, first, cutting the loops in the grooved wires as the cloth is woven by means of a reciprocating knife combined with tbe weaving parts of the power loom, and operated substantially as herein described.

Second, combining with the reciprocating knife for cutting the loops a take-up roller provided with cogs which enter between the looping wires, substantially as herein described, for the purpose of preventing the ranges of loop-in succession and in a proper position to the action of the knife, as herein described.

Third, combining with the reciprocating knife for cutting the loops beveled or wedge-formed guides, placed near the selvedge of the cloth, substantially as herein described, for guiding the knife at the commencement of the cut, as described.

Fourth, combining with the reciprocating knife for cutting the loops, a trough into which the wires fall from the cut pile, and a second through into which they are successively transferred, substantially as herein described.

Fifth, combining with the second trough into which the wires are transferred, chains with projecting wings or spurs, substantially as herein described, for taking the wires in succession from the said trough and transferring them to a wire box attached to the lay, substantially as herein described.

Lastly, guiding and supporting the looping wires as they are introduced under the warps by means of slots or notches in the dents, substantially as herein described.

To J. B. H. Chatain, of New York, N. Y., for improvement in machines for planing ornamental mouldings.

I claim the method of using two scrapers, one in advance of the other, in combination with a single guage.

Second, I claim the method of using the universal joint, in combination with the swivel carriage and two gauges, the same being constructed, arranged and operated essentially as set forth.

To E. F. Condit & A. Taylor (Assignors to Woodbridge Eaglesfield,) of Springfield, N. J., for improvement in machines for making hat bodies.

We claim the combination of the rotating brush for throwing the fibres, with the cards which take the fibres from the feed rollers and separate and prepare them, and with the trunk which guides and the exhausted former on which the fibres are deposited substantially as herein described.

To Chas. Downer, of Philadelphia, Pa., for improvement in Weighing Frames.

I claim the manner of constructing the portable frame for the scale beam as set forth, said frame consisting essentially of the hinged beam, movable standard, and platform, these parts being arranged and combined substantially as set forth.

To E. L. Evans, of Mount Holly, N. J., for improved apparatus for trimming vessels.

I claim the method herein described, of trimming vessels by means of a shifting weight operated by an adjustable cradle, substantially as herein set forth.

To S. Fahrney, (Assignor to A. & J. Fahrney,) of Boonsboro, Md., for improvement in tools for preparing hubs for boxes.

I claim the construction of the implement or tool above described and represented, for excavating or cutting out the ends of hubs of carriage and other wheels by hand, for the reception of the ordinary wheel boxes and linchpins, the cutter, being made to recede from the centre of the hub simultaneously with the operation of cutting the excavation in concentric circles by the combined and simultaneous action of the screw, and nut, in connection with the recessed bar, and handles, transverse bar, and bow arranged and operating in the manner and for the purpose set forth.

To S. S. Fitch, of New York, N. Y., for improvement in Abdominal Supporters.

I claim, first, two short elastic arms S shaped, connected with other parts of a supporter, with a pad upon each end, one pad to rest upon the short ribs behind the curve and free from the spine, while the other rests upon the flat plate of the os-Illium; each S plate being united at the middle to a long elastic arm by a mortise allowing no motion but that of sliding in and out; the long arm and short arm always crossing at right angles throughout the mortise.

Second, I claim the invention of two long elastic arms, in connection with other parts of a supporter, and with the S shaped arms by a mortise and screwbolts, these arms so cut as when laid upon a flat surface that the edge will be convex, then concave and then straight, and formed so as to set flat upon the person, rising above the hips with a point of rest about one third of its length from the back and falling down in front to a pad, and by so adjusting the shape of the arms and point of rest as to press directly upon the hernial rings and lift up the abdominal contents towards the top of the hips.

Thirdly, a supporter pad so formed is to be thicker on the inside near its lower and outer edge at the point of termination or lower fasting, to it, of the long elastic arms, so as to press directly on the hernal rings, the lower outer edges being cut so as to follow the course of the groin, and the lower edge yoked, or cut convex, to go above the os pubis thus acting upon all those parts occupied by the abdominal rings.

To J. P. Groshon, of Yonkers, N. Y., for improvement in Seed-Planters.

I claim the levers constructed with their ends, in the manner substantially as described, to prevent the sides from being actuated when the motion of the wheel is reversed.

To S. Harris, of Philadelphia, Pa., for improvement in hoisting machines.

I claim the Twist Break, whether constructed as set forth, or in any other way, substantially the same, and whatever the nature or purpose of the machine to which it may be attached.

To F. D. Hayward & John C. Bickford, of Colchester, Conn., for process of rolling india rubber cloth.

What we claim, is the new or improved process of applying and fixing the rubber to cloth by means of rollers; the said improved process being a combination of the method of spreading the rubber by the pressure of rollers, and the method of grinding and fixing it at the same time against and into the substance of the cloth, all as specified.

To G. H. Hoagland of Piermont, N. Y., for improved method of employing the exhaust steam.

I claim the running the exhaust pipe into the main steam pipe, curving it, and providing with an aperture and valve, substantially as herein described, by which the current of steam from the boiler has a tendency to open the valve at intervals and draw into the steam pipe a portion of the exhaust steam.

To H. H. Huntley, of Cincinnati, Ohio, for improvement in Cooking Stoves.

I claim the front part of what is usally an open flue under the oven to consist of a hot air chamber as described, and the rear part of the same, and also the space at the back of the oven to consist of reverting flues by compelling the draft to pass over the top of the oven, down back corner diving flues, reaching from top to bottom of the stove, and then lick under the oven and around the division plate, between these diving flues and the discharge flue; thus prolonging the contact of the heat with the back vertical and horizontal portions of the oven, and equalizing the distribution of the heat and flame, so as to make the oven cook well from all directions.

To J. R. Innis, of Easton, Pa., for improved beaters in hide handling cylinders.

I claim, first, the wheel having buckets diagonally across the surface alternately from right to left, and left to right.

Second, the rollers or slats in combination with the chamber, substantially in the manner and for the purpose set forth.

J. MacGregor, Jr., of Wilton, N. Y., for improvement in double oven cooking stoves.

First, I claim the movable flue, for dividing the oven into two parts, as above specified.

Second, I also claim forming an aperture in the division plate, between the front boilers to protect it from the intense heat of the fire, and to supply air for combustion as described.

To J. W. Nystrom of Stockholm, Sweden, for improved centripetal Propeller.

I claim the peculiar curve given to the propeller blades as herein set forth, to counteract the tendency of the centrifugal force to deflect the issuing water obliquely to the axis of the propeller.

[The Patent Office is exceedingly liberal in some cases, to what it is in others.—Ed.

To Wm. Ostrander & Wm. Webster, of New York, N. Y., for improved method of forming sheet metal tubes.

We claim the method of forming sheet metal tubes, &c., upon a mandrel supported by and obtaining its revolution from three rollers, one or more of which are adjustable, subtantially in the manner herein described.

To John Pridham, of New Brunswick, N. J. (Assignor to H. H. Day, of Jersey City, N.J.,) for the use of the Oxide of Tin in the manufacture of india rubber.

I claim the combining rubber with tin as set forth and the combination of these with sulphur and heat, whereby I produce a fabric having a black surface and which is capable of withstanding all the elements which distinguish vulcanized from other preparations of rubber.

To P. P. Quimby, of Belfast, Me., for improvement in Steering Apparatus.

In my apparatus I introduce the lever for the purpose of moving the rudder with the same length of tiller, through a given space with less turns of the wheel, than can be done in any other way with the same pitch of screw, by which I obviate a great objection in former apparatus for steering, to wit, the want of command over the rudder by reason of the great number of turns of the wheel, or the great friction produced by iucreasing the pitch of the screw; these being the only two modes used by former inventors for obtaining this velocity in the movement of the rudder, to wit, shortening the tiller or increasing the pitch of the screw.

What I claim is attaching the nut acted upon by the screw, to an interposing lever, arranged substantially as herein described, by which arrangement I am enabled with the same pitch of screw, and the same number of revolutions of the wheel to move the rudder through a larger arc, than in the old apparatus.

To F. Ransom, of New York, N. Y., for improvements in pumps for ships, &c.

1st, I claim combining the pump barrel of sections pumps, in which are placed the cheek or stop valve and the piston, with the supplying pipe or pipes, by means of an exhaust chamber, into which the water flows by atmosphereic pressure and for the purpose specified.

2nd, I claim in the combination next above specified, making a lateral hole through the pump barrel, and communicating with the exhaust chamber, substantially in the manner and for the purpose specified.

3rd, I claim combining with the exhaust chamber, which unites the pump barrel and the supply pipes, and interposing between these, a strain, sieve, or filter, substantially as described, and for the purpse specified.

To N. Routzahn, of Middletown, Md., for improvement in Churn-dashers.

I claim the combination of the whirls with the revolving frame dasher, the several members being arranged and constructed substantially herein set forth.

To E. Sawyer, of Boston, Mass., for improved movement of the pointing dies in spike machines.

What I claim is operting the curved dies for pointing a spike, by setting them in the adjacent ends of two sets of toggles arranged with the cam projections, and guiding blocks, and the whole operating substantially as herein above described.

To A. H. Tingley, (Assignor to E. W., H. F. & A. H. Tingley,) of Providence, R. I., for improvement in machines for sawing marble.

I claim the combination of mechanism applied to the sprocket wheels, endless, windlasses and suspension chains of the saw frame; the said combination being for the purpose of gradually lowering the gang of saws in the proportion required, as the sawing process progresses. The combination consists of the train of mechanism which is applied to the lower sprocket wheel shaft, or axel, and the driving shaft, and intervenes between the two, and is actuated by the revolutions of the driving shaft said train of mechanism consisting of the tooth gear, pinion, gear wheel, endless screw, beveled wheel, pinion, and ratchet wheel, together with the pawl, arm, connecting rod, sloted plate, rocker shaft, crank, screw, nut, washers, cranks, and connecting rod, as above specified, not meaning to claim as any part of the same the crank, click, and ratchet, wheel, except in their combination therewith, and for the purpose of enabling a person to raise or lower the gang of saws by applying his hand to the crank, it being understood that when these last contrivances are not used, the wheel, must be firmly fixed to its axs, and not placed loosely thereon as it is when such contrivances are employed.

I also claim, the employment of the two arms, extended in opposite directions above and below their rocker shaft, and used in the manner and for the purpose as specified.

I also claim the vibratory tubular watering apparatus, and mechanism combined with its said mechanism consisting of connecting rod, pulley, endless band, and pulley, for giving to it a reciprocating movement over the gang of saws and stone as spcified.

To Asa Whitney, of Philadelphia, Pa., for improvement in cast iron Car-wheels.

I do claim that the invention above described, is an improvement in the form of any part of railroad wheels than that contained between the hub and rim, But what I do claim, as my invention is the projecting ribs, in combination with the corrugated disk in the manner and for the purpose herein set forth.

To D. R. Williams, of Prospect, Conn., for blind slat Operator.

What I claim is the combination of the bevel wheels and the movable joint, essentially in the manner and for the purposes herein described.

To G. W. Yerger, of Philadelphia, Pa., for improvement in Artificial Legs.

I claim the exclusive privilege of making artificial skeleton legs of thin metallic ribs, or plates and rings or hoops united together by rivets or other suitable fastenings substantially in the manner herein set forth, irrespective of any particular combination with other parts connected therewith.

[An engraving of this leg has already appeared in the Scientific American.

DESIGNS.

To Wm. P. Cressen, David Stuart and Peter Seibert, of Philadelphia, Co., Pa., (Assignors to Wm. P. Cresson,) for design for Stoves. Two separate patents.

To J. H. Conklin, of New York, N. Y., for design for stoves.

To E. S. Archer & R. F. Warner, of Philadelphia, Pa., for design for Chandeliers.

Notice

Our subscribers will find a portion of the Claims, which should, by common rule, be on this page, on page 226. Both lists arrived from the Patent Office, last week, after we went to press—too late for our last number. We will get through the combined lists next week.

Bran for Manure.

Wheat bran is said to be a good fertilizer for corn. Farmers are using it in the State of Delaware with great success. A handful is is put in a hill. The bran is first put in and covered with a thin layer of soil, after which the corn is dropped on top of it. Fermentation of the bran takes place, which produces the result referred to. It also operates well on wheat.

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TO CORRESPONDENTS.

"Cayrenne."—Your letters came safe and the order has been attended to. If we had "Chambers Information" on hand we should be glad to send them. But we have ceased keeping them for sale, as the orders of late have been very few. Correspond with the publishers of such works as we advertise, as in all cases they are left with us to sell.

"T. D. L., of N. H."—The drawing of your substitute for the crank has been examined.—The use of a chain passing over pullies is not a new device; independent of this, however, it is not so good as some others we have seen for the same purpose, and no engineer of any skill whatever would risk the use of chains when applied to a large boat, owing to the liability of their breaking. They might work well on a small scale. If you entertain contrary opinions, and experiment on a large scale would settle the point, which we advise.

"Dr. W. M. B., of Mo."—The works referred to in your letter cannot be sent by mail, as they are bound. We might as well undertake to exterminate the entrance of musquitoes as to shake public confidence in nostrums, it cannot be done.

"T. L. K., of N. Y."—Yours has just come to hand.

"G. W. H., of Tenn."—We do not know of any second hand 4 horse engine complete for sale. A new one can be purchased for $325, with boiler.

"W. C., of Tenn."—The numbers of Arnott's Archetect will be forwarded to you as soon as they are issued. They were to be ready on the 1st. of Jan., No. 6 is the last out.—Three Nos. Duggan's work sent.

"R. M. Mc C., of Ind."—The notice you received by mistake, your subscription does not expire until No. 52.

Rev. J. H. Y., of Pa."—Vol. 4 cannot be supplied to you in sheets complete. We have 12 bound Vols. left, at $2,75.

"A. F., of Ohio."—We think it would cost more to get up such a pump as you speak of than to buy a common one, besides it would be less durable. Your subscription expires with No. 37 this Vol.

"W. S. B., of N. Y."—The first part of the Commissioner's report was noticed in our paper some time since, and its nature stated—it is not full. We do not know any publication of the kind referred to.

"J. R. P., of Ala."—Your books were forwarded on the 2nd inst.

"W. C. G., of N. Y."—Breaks, such as you refer to, have been patented, we have a model of one now in this office.

"B. H. W., of Geo."—We know nothing of the paper you refer to, we think it is not published here. You have been credited with $13,25—our full list of agents you will see is discontinued, we have done it for want of room.

"S. G. S. of Iowa."—We think that J. Wilson of Philadelphia, Pa., has the management of the right of your State for the Woodworth Patent. You had better address him.

"J. W. O. &., G. L. C. of Ohio."—The papers ordered by you have been forwarded from this office, and we presume you will find them in the P. O.

"H. W. J., of Va."—The odd numbers you ordered cannot be furnished. Whenever the wrapper is found pasted to the paper by damping it you will have no trouble in removing it without injury to the paper. We have thousands of papers to wrap, and cannot personally see that they are carefully pasted.

"J. L. H., Ill,"—We have forwarded all the back numbers you ordered, except No. 2 Vol. 4—we have long been short of this number.

"H. S., Jr., of Mo."—You can make an application for a patent without assigning the right, being a minor the property would not belong to you legally, but to your father, until you should become of age. This is all the obstacle that you would encounter. $6 received and credited.

"J. C., of Va."—It will be better for you to buy a book on the subject. You cannot learn without practice, for no man can tell you how to mix to a shade. You can buy the different colors and mix them with good boiled linseed oil, and that is all.

"C. B. H., of N. Y."—The portability in reference to an arrangement, is not a patentable point by law. You are not correct about the caveat. Any body can make and use your engine and boiler, until you get a patent. The best thing for you to do, to save money, is to get up a model first, and make application at once, but you must risk even the patent for the boiler.

"E. B., of Jamestown, N. Y."—Mr. Parker's petition was not granted. See page 212, No. 27.

"G. C. G., of O."—The model of your "Rotary" is at hand and will be examined in a few days—$35 received.

"S. K. of Phila."—We were not aware of what you state about this pump, your articles would be acceptable because the result of experience and being brief and clear.

"C. L., of Ct."—The great difficulty in depositing alloys, is in the nature of the two metals which do not deposite alike. We have heard of it being done, but never have seen it, and we think it is not very practicable.

"H.D.T., of Va."—We believe that the phenomenon you speak of is not known to many, but it is not new to us. It is described by Armstrong in his work on "Steam Electricity.

"L. H. G., of Vt."—Your Extension bit, we believe is new and patentable, likewise the Stringer, but we have a very unfavorable opinion about the side hill plough.

"P. G., of N. Y."—The principle of the reaction water wheel is common property; Parker's claim is for conveying the water on the wheel by a whirling motion, using two wheels on a shaft and working them in air-tight boxes.

"P, S. D., of Pa."—We are obliged to you for the card and samples, and will be happy to see you when you come to this city.

"E. A. D., of N. Y."—Your plan of the steam pressure register and water line register is new to us, and patentable, we believe.—Your plan would certainly prevent explosions, with a legal inspector to examine, as you state. We like your invention.

"J. McN., of Delaware."—Your plan of safety valve is new, and patentable, we believe.

J. C., of H. st., New York.—The claim of Mr. Borden is for combining the nutrious parts of flesh reduced to spissitude, with flour or meal, and making them into biscuit or bread, for preservation. Your plan to retain the flavor is good, but Mr. Borden brings his meat from cold to the boil, and his practical way is to remove the moisture by the vacuum pan.—Your plan for separating and keeping the aroma albumen, would be good for the purpose.

The initials of those persons whose specifications have been forwarded to the Patent Office since our last issue :—

A. O., of N. J.; J. D. H., of N. Y.; C. B., of R. I.; H. P., of N. J.; R. G. B., of R. I.; P. J. C., of Conn.; W. H. S., of Conn., and F. D. T., of Me.

T. T. W. of Conn.; O. C., of Ill.; A. W. P., of O.; C. R., of La.; C. & D., of Mass., and C, S. S., of Ky.—

Your cases are before our examiners, and the drawings are nearly completed. Look out for your specifications in a few days.

Money received on account of Patent Office business, since March 26, 1850 :—

R. M. S., of Ky., $10; C. S. S., of Ky., $20; C. B., of R. I., $20; J. D. H., of N. Y., $20; P. J. C., of Conn., $20; S. P. G., of Mass., $20, and R. D. P., of Vt., $50.

Will Warren Robinson, who has an application for a patent pending, please send his address or call at our office?

Back Volumes Scientific American.

We have remaining a few more copies, Volume 4 bound, for $2,75; but of previous Volumes, no *complete*, sets either bound or in sheets. Of Vols. 3 and 4 we can furnish sets of about 40 numbers each (not consecutive,) for one dollar per set; of Vols. 2 and 3, sets of about 50 Nos. (containing both Vols.) at the same price (one dollar). We have parcels done up ready for mailing of all the different Vols. referred to above, and on receipt of $1, either of the sets ordered will be immedially forwarded by mail.

Back Volumes.

We are no longer able to supply Vols. 1, 2 and 3 of the Scientific American. We have on hand about 50 copies of the 4th, Volume bound, price $2,75, if any of our subscribers are intending to order a copy, they had better do so without delay.

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Gilroy's Art of Weaving, - - - - -	5,00
Gilroy's Art of Calico Printing, - - -	5,00
"Scientific American," Vol 4, bound, - -	2,75
Minifie's Drawing Book, - - - -	3,00
American Steam Engine, Plate and Book of Description - - - - - - - -	3,00
Scribner's Mechanics, Tuck, Gilt, - -	1,25
Treatise on Marine and Naval Architecture,—published monthly, 12 Nos., each - -	,75
Leonard's Mechanical Principia, - - -	1,50
Mahan's Civil Engineering, - - - -	3,00
Morfitt's Chemical Manipulations, - -	2,50
Instructions for Testing, Melting, and Assaying Gold - - - - - - - -	,25
Duggan's great work on the Stone, Iron, and Wood Bridges, Viaducts, &c., of the United State's Railroads. Published monthly in parts to be completed in 12 parts. Parts 1, 2 and 3 now ready, each - - - - - - - -	,75

N. B. This work is supplied to subscribers only.

LAKE SUPERIOR.—Its physical character, vegetation and animals, compared with other and similar regions; by L. Agassiz. with contributions from John L. Le Conte, A. A. Gould, Asa Gray, T. W. Harris, J. E. Cabot, Leo Lesquereux, and Edward Tuckerman; with a narrative of the expedition, and illustrations, by J. E. Cabot.—This work which has been long delayed, on account of the unexpected amount of material, will be one of the most valuable Scientific Works that has appeared in this country. Embodying the researches of our best scientific men, relating to a hitherto comparatively unknown region, it will be found to contain a great amount of new scientific information. The illustrations, seventeen in number, are in the finest style of the art, by Sonrel; embracing Lake and Landscape scenery, Fishes, and other objects of Natural History, with an outline Map of Lake Superior. In one elegant, super royal octavo volume.

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MOSSELMAN ZINC.—The Vieille Montaigne Company supply their agents, M'Call and Streng, New York—with Roofing and Flooring in sheets 3 by 7 feet, from 11 to 22 ounces per square foot. Corrugated, 3 by 7 feet, 27 oz. for roofing public buildings. Ship Sheathing Metal, 14 by 48 inches, 22 to 30 oz. Perforated, of various sizes, for sieves, sifting metals, &c. Grey Zinc Paint, for preserving Iron and Wood work. Spelter, Wire, Nails, Imitation, Bronze, Statuary, &c. They warrant their metal free from any admixture of iron, or any brittle substance, and recommend it for the manufacture of articles exposed to the action of water, as it does not rust. Plans, specifications, models, and other information, may be had of their agents.

28 5t * Liege, Belgium, January 1850.

ASPHALTUM.—To Manufacturers of Iron Ware and Varnish Makers.—The subscribers being the principal holders and expecting to receive a large and continued supply of the real asphaltum, would call the attention of Varnish Makers, Japanners, Machinists, Manufacturers of Iron Ware, Steamboat Machinery, Agricultural and other Instruments, Shipholders, or others requiring or using Black Paint, Black Varnish, or Japan, to the article as being of fine quality, very brilliant, and coming very much cheaper than any gum used in the manufacture of Varnish, Japan. or Paint.

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IMPORTANT INVENTION.—A new article of Machine Belting, made of a material never hitherto used for that purpose: 25 per cent. of power saved by its use. Its expense is 25 per cent. less than the patent stretched leather, or india rubber Belting. All sizes made and constantly kept on hand, from 1 inch in width to 30 inches.

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Patent Office.

128 FULTON ST.

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He has also constantly on hand a full assortment of Leather Belting, revetted, stretched, and cemented, of all sizes, made from the best material, and in the best manner, warranted equal, if not superior to any made in this country, and at prices which must be satisfactory to those wishing a superior article. He is also agent for the sale of Cotton and Woolen Machinery of the most improved kinds. Those favoring him with a call will be satisfied, both in regard to quality and price. P. A. LEONARD, 66 Beaver st.

23 3m*

SCRANTON & PARSHLY, New Haven, Conn. have just finished and will sell, to the first who will fork over the cash, 2 splendid side Lathes, 12 feet long, swings 25 in., weighs 2800 pounds, with back and screw gearing—centre follower, rest, drill chuck, and overhead reversing pullies—all complete, price $300. It is a rare chance for those in want of Lathes. Also, 7 of those 8 feet Lathes, a. $125; each. The fact that 5 of them have been sold within the last 10 days, is all that need be said. Send the money aud we will ship to your order. Other Lathes (large 2d lathe excepted) as heretofore advertised in this paper, for sale at low prices as usual. 22 tf

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by

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SASH AND BLIND MACHINE—Patented by Jesse Leavens, of Springfield, Mass., is the best Sash and Blind Machine now in use. The Machine cost $300 at the shop where they are made, near Springfield—extra charge for the right of using. The machine does all to a Window Sash and Blind except putting them together. Orders from abroad will be promptly attended to, by addressing JESSE LEAVENS, Palmer Depot, Mass. 22 20t*

BARLOW & PAYNE, Patent Agents and Consulting Engineers, 89 Chancery Lane London
m12 tf Patent Journal Office.

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Scientific Museum.

For the Scientific American.

Tanning—Practical Remarks.

(Continued from page 224.)

The vats in which the leather is laid away, are ranged next in order to the handlers, and fill up the remaining floor ground of the tanner. They are of the same length and depth but two feet wider than the latter, to make room to lay two sides for each dusting. They have lines of logs, plugs, &c., as already described, but leading into the junk. All the liquor from the yard retaining more or less tan unspent, is pumped into the leeches, where its strength is renewed. These vats are all numbered, from one upwards, and are registered in a tally book, which is kept at the office, the date, sides, mark and liquor of every layer are carefully recorded in it. The first layer is made in liquor from off the layers, if there is any in the yard of about 8° strength. It is first let off into the junk, the vat cleaned out, the liquor pumped into a receiver and run through the liquor logs into the vat required, filling it two-thirds full. Ground bark first sprinkled with water, to keep down the dust, is brought from the bark loft on wheelbarrows, in baskets or barrels, and emptied into an open portable box six feet long, three feet wide and two deep, flaring at the top with ribs at the sides extending far enough for handles at each end. This is placed on the platform, along side of the layaway opposite the pack to be laid. A man standing at one end of the box spreads, with a shovel, the bark over the surface of the liquor, when two other men, one at each end of the pack, spread on to the bark two sides, the grain always up. The man with the shovel then spreads over the sides a slight dusting of bark, when more sides are laid, and the process is repeated, the bark and sides alternating until the pack is all laid down —a coating of three inches of bark is then spread on the top sides, and if the vat is not full, more liquor is run on to it. It is tallied for five days, when the sides are raised by two men, both hooking up the top side and laying it along side as before, until the whole pack is "hoisted"—the plug is started, the liquor runs off into the junk; the bark remaining in the vat is "pitched" into wheelbarrows and "wheeled" into the bark loft (a part over one or more set of leeches, reserved for old bark,) where it is "dumped" in, and in due time "heats," until it is thoroughly spent. The liquor is used to run on to new leeches, or in the yard on any layer for which its strength is adapted. The plug is then "put in," a liquor of 10° run, and the pack again laid as before, on the second layer of 8 days.

When the time expires it is laid the third time for twelve days with 12° liquor; the 4th for 15 days, with 14° liquor; the 5th for 20 days, with 16° liquor; the 6th for 25 days, and 18° liquor; the 7th for 30 days, with 20° liquor; the dusting of bark being also increased on every new layer. When it is raised the 7th time, it is assorted by the tanner and his foreman, with each a sharp shoe knife in hand, making a slit into the butt of a few top sides and passing into one pile, all they find tanned through, or enough "to pass," and on to another all that are "short," they are soon able to judge which are tanned without cutting, and separate them accordingly.

The tanned sides are counted, the number entered in pencil on the list, against the No. of the vat; these sides are wheeled to, and spread into a soak vat, reserved near the scrubbing machine, filled with fresh water where they remain over night. The culls are collected and laid away on the 8th layer for 30 days, with a 22° liquor, when they are usually all taken out, but if any are found short, they are laid on the 9th, and sometimes on the 10th layer each of 30 days, before they are taken out. A list of all the packs due during the coming week is made out from the tally book every Saturday after the changes of the week have been entered; arranged in two columns, the tanned packs, and layaways separately for the guidance of the foreman. He "marks off" in pencil against each pack on the list if assorted or wholly taken out, the number of sides so taken. If laid away the date and strength of the liquor, and adds the new packs, that have been laid away, the quantity, the invoice mark, and weight of the liquor. These are duly entered at the office where the tally book shows the actual state of every side in the yard. Every tanner should keep one of Pike's Barkometers, by which he can tell the exact strength of his liquors in degrees, from 1° to 50° above water which stands at 0.

We shall contine the subject in a future number.

History of Propellers and Steam Navigation.

[Continued from page 224.]

Fig. 32.

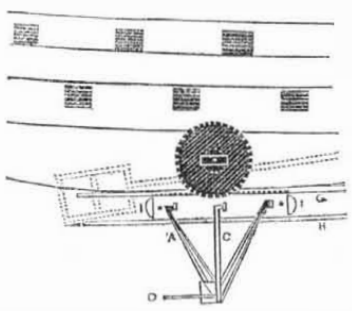
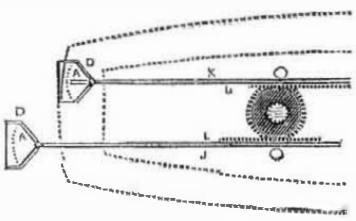


Fig. 31 represents a plan of folding paddles, D D, placed on both sides of the vessel. The paddles are attached to hinged joints, A A, to the prolonged axis, C, of the traversing frame. They fold and present only their sharp edges to the water when moving forward from stern to stem, and they open and act with a large surface on the water when moving backwards. The traversing frames are kept to the sides of the vessel by grooved guides, G, H. I I are friction rollers at the ends, and at the middle to keep them steady, and to assist them in moving. The upper parts of the frame consists of a rack which is acted upon by the toothed wheel, the axis of which pass through the vessel and terminate in similar wheels on the other side, to act upon similar racks.

To the piston rod of the steam engine, whose cylinder (which may be either situated above or below the plane of the axis) is placed in a position somewhat inclined, as represented by dots, is attacted a rod which passes under a pinion on the axis of one pair of the wheels, and over a pinion on the axis of the other pair of wheels, and vice versa. The parts of the rod passing under the one and over the other of these pinions, and thus, by the alternating motion of the piston of the engine, cause one pair of the paddles to move forwards, while

Fig. 33.



the other pair are moving backwards, by which one pair of the paddles on each side are kept continually in action. The paddle stems or axis are attached by stop hinges to the upper part of the paddle frames, and to the lower parts by screw bolts, to fix them when in use; by this arrangement, the paddles can be unshipped, and removed from the side of the vessel, whenever the state of the wind renders their application unnecessary.

Figure 32 is another method of attaching similar folding paddles, A D, to the ends of two or more rods projecting through stuffing-boxes, under the water line, in the stern of the vessel. These projecting rods, represented by K L, made of metal, and turned cylindrical, are connected with the piston of a steam engine, through racks and pinions, in a manner similar to the connection of the paddle frames before described. The intention of the wheel and pinion, the former acting on the racks connected with the projecting rods, and the latter being acted upon by the rack connected with the engine piston, becomes necessary to obtain a greater velocity in the paddle than could be given to the piston of a steam engine. The projecting rods have rule joints at the extremities nearest the vessel. When one of the screw bolts is withdrawn, and the rods being detached from the rack, then pushed out beyond the usual extent and the end to which the paddle is attached elevated to admit of the paddle being easily datached, the rod is to be let down and withdrawn, till it is all within the vessel, except its end, which must be left in the hole or stuffing-box, to prevent leakage; so that with its application there need be no exterior appendages, except when the paddles are in action. This invention is thirty years and was patented by a Mr. John Melville.

Refining of Gold.

Nitric acid is the chief means resorted to for this purpose, the refiner taking advantage of the fact that silver is dissolved by this acid whereas gold is not affected by it; but the method is only available when the weight of the silver is at least double that of gold. It has been found also of late years that the use of sulphuric acid offers advantages over that of nitric, but that to produce the best result it is advisable to have the metals in the following proportions; silver 725, gold 200, copper 75, to which the alloy to be refined requires to be reduced before the operation is commenced. It may be worth while to know this in the management of gold ores.

The purity and therefore the value of gold is also sometimes determined by observing the color and appearance of the streak or mark it leaves on a hard smooth stone, generally what is called Lydian stone or flint jaspar by mineralogists, but known to jewellers as the *touch-stone*. This method is of course not to be depended on too much, but when the ordinary chemical tests of the blowpipe and acids are combined with it, it forms a useful guide in practice.

The fineness of gold is usally estimated in carats, the perfectly pure metal being called fine, and reckoned as "twenty-four carats," and that which is less pure as so many "carats fine," as it has a twenty-fourth part pure.—Thus English standard gold is said to be "twenty-two cartas fine," consisting of twenty-two parts pure gold, and two parts alloy (either silver or copper, and without regard to the nature of the alloy). So also gold is said to be twenty carats fine when the proportion of alloy is one-sixth, or twenty parts fine gold and four parts alloy.

The carat is subdivided into quarter, eighth, sixteenth and thirty-second parts for more minute specification; and carats are either real or proportional, the carat however being rarely used now as an actual weight.

In the United States the eagle of ten dollars weighs 269.85 grains, of which 232 are fine gold. The value in English money, is £2 3s. 10½½d. The standard in the United States is nine parts of gold to one of alloy, or 21½ 1-10 carats fine, being therefore two-fifths of a carat lower than in England.

It is a mistaken idea to suppose that nitric acid is a true test of the gold known in the commerce of jewelry, unless it is warranted at 24 carats fine, a thing which no jeweller does. It is called fine gold when it is alloyed with 6 foreign parts (18 carats fine.) The most common articles are only 12, 13 and 14 carats fine. If common jewelry, therefore, was submitted to strong nitric acid, it would immediately act upon the copper, but that would not test its quality in fineness, that can only be done by analysis. Nitric acid, however, is a test of pure gold in gold dust, and is useful for that purpose.

To Imitate Mahogany.

Let the surface be planed smooth, and rubbed with a solution of nitrous acid. Then apply, with a soft brush, the following mixture: one ounce of dragon's blood, dissolved in about a pint of spirits of wine, and with the addition of a third of an ounce of carbonate of soda, mixed and filtered. When the polish diminishes in brilliancy, it may be restored by the use of a little cold-drawn linseed oil. Dragon's blood, as most of our readers know, is a resin obtained by incision from certain tropical plants, and is sold at the druggists, to the varnishers and marble stainers. The method is extensively adopted in France, and might be well adopted in the United States, for the interior decorations of our dwellings.

LITERARY NOTICES.

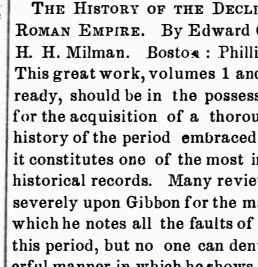
The History of the Decline and Fall of the Roman Empire. By Edward Gibbon, with Notes by H. H. Milman. Boston: Phillips, Sampson & Co.—This great work, volumes 1 and 2 of which are now ready, should be in the possession of all who thirst for the acquisition of a thorough knowledge of the history of the period embraced in these volumes, as it constitutes one of the most important epochs upon historical records. Many reviewers have commented severely upon Gibbon for the malignant sarcasm with which he notes all the faults of the Christians during this period, but no one can deny the lucid and powerful manner in which he shows the common tendency of the slower or more rapid religious or civil innovations. He approached all the various subjects fearless of what might be said pro or con, and the result is, that his work is the standard authority of the day, for information relating to this eventful period. As a perspicuous writer Gibbon had no superior, and he possesses the faculty of saying much in a few words, arranged in short easy sentences. The work under consideration will no doubt (as it should) meet a large sale, the price bringing it within the reach of all: to be completed in six volumes. Dewitt & Davenport have the volumes for sale.

Headley's Miscellanies: J. S. Taylor publisher, 143 Nassau street, N. Y.—Volume 3 is just from the press, and is composed of some of the best writings of this celebrated author. Volumes 1 and 2 were published about three months since, at which time we made a passing notice of the work, from a hasty perusal, but since we have attentively read it, and we find his writings exceedingly entertaining, as well as containing historical facts worth remembering. The work is to be completed in 5 volumes.

We have received from Messrs. Gould, Kendall & Lincoln, several copies of the Annual of Scientific Discovery noticed in our last number. On the receipt of one dollar, we will forward a copy in paper covers, by mail.

The Water Cure Journal—Is a monthly Magazine, published by Messrs. Fowler and Wells, and devoted to the discussion of all useful subjects, and is especially devoted to the object indicated by its name. It contains a great deal of information suitable for everybody, and is altogether a sterling work.

A Great Work.—Mr. F. Gleason, publisher, Boston, has now in press and will publish on Saturday, April 13th, a splendid original romance, entitled 'The Mistake of a Life-time: or, the Robber of the Rhine Valley, a story of the mystery of the Shore, and the vicissitudes of the Sea,' by Waldo Howard, Esq. The manuscript of this work has been purchased at an outlay of some $3000, besides which the author demands a portion of the profits of the work. Many years have been employed upon it; and we understand that no small competition was evinced by the trade to secure it, but Mr. Gleason appears to have been the fortunate one who has obtained it. The work will be got up in beautiful style, and will be for sale at the periodical depots and bookstores for the small sum of 12 1-2 cents. S. French, 151 Nassau st., N. Y., (late 293 Broadway), is Wholesale Agent for the above work. 1t*



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